high enough (~500 mR/hr on contact) that remote handling will be required. The principal components in ILAW glass are silica, calcium oxide, and sodium oxide, making it a soda-lime silicate glass. Other waste forms are being considered for ILAW and are being analyzed in the Tank Closure EIS (68 FR 1052).

2.1.4.2 WTP Melters

The vitrification of both HLW and LAW wastes would use large melters composed of metal structural components and ceramic refractories to contain the molten glass. With use, the refractors are slowly consumed and some metal components can become corroded. Eventually it may be necessary to replace the melters with new units and the old melters will become a waste. Packages containing the melters can have dimensions of 4.6 to 7.6 m (15 to 25 ft) in length, height, and width; can weigh 545,000 kg (600 tons); and will require special handling.

2.2 Hanford Waste Storage, Treatment, and Disposal Facilities, and Transportation Capabilities Related to the Proposed Action

This section briefly describes existing and proposed facilities for the management of Hanford solid waste. The facilities provide storage, treatment, or disposal functions and are grouped by their primary function in the following discussion (see Figure 3.2 for facility locations). (See FH 2003 for additional details on specific facilities.) Text describing new facilities or those that would be substantially modified under the alternatives described in Section 3 is presented in text boxes to distinguish those facilities from existing facilities. This section also briefly discusses the transportation of waste and the Hanford pollution prevention/waste minimization program.

2.2.1 Storage Facilities

The primary storage facility for solid radioactive and mixed waste at Hanford is the CWC. Storage also exists at WRAP, the T Plant Complex, and the LLBGs. The T Plant Complex, described in Section 2.2.2.4 as a treatment facility, would be used to store sludge from the K Basins, and potentially other RH waste, as space is available. Trenches in the LLBGs have been used for retrievable storage of TRU wastes and other materials. Additional details on the CWC, trenches and caissons in the LLBGs, and grout vaults are described in the following sections.

Storage Facilities

Existing Facilities
- Central Waste Complex
- LLBGs
  - Trenches
  - Caissons
- T Plant Complex
- WRAP
- Modified Grout Vaults

Proposed New/Modified Facilities
Additional CWC Buildings

2.2.1.1 Central Waste Complex

The CWC is a series of handling areas, storage buildings, and storage modules that have been built in several phases for the receipt, inspection, storage, and limited treatment (that is, absorption and solidification of free liquids, neutralization of corrosive materials, and stabilization and encapsulation in solid waste matrixes) of wastes and materials awaiting verification,

treatment, or disposal. The primary waste types of interest to the HSW EIS, with respect to storage, are MLLW and TRU waste, because most LLW is sent directly to burial. An aerial view of the CWC is shown in Figure 2.3. The Solid Waste Inventory Tracking System lists CWC inventory at the end of 2001 as a total of about 9200 m^3 (325,000 ft^3), composed mainly of MLLW 7350 m^3 (260,000 ft^3) and TRU waste 1560 m^3 (55,000 ft^3) (FH 2003). Its capacity is estimated to be 16,700 m^3 (589,000 ft^3). Most MLLW and TRU waste received since 1987 is now stored in the CWC, including TRU waste relocated from other facilities at Hanford. The CWC could be expanded as needed for future receipts of waste that require storage, including any retrievably stored waste removed from the LLBGs.

The CWC waste is segregated by content to assure compatibility of the contents of the various storage containers (for example, acidic and basic materials are stored separately). In addition to MLLW and TRU waste, some non-conforming LLW and GTC3 LLW may also be stored in CWC. All waste containers must be CH or shielded to CH levels to be accepted at CWC. Some RH waste is stored at CWC by shielding it to CH levels. Most of the waste is packaged in 208-L (55-gal) drums; however, other package sizes can also be stored.

Typically, four drums are banded onto a pallet to allow easy handling by forklifts and stacked up to three layers high. Aisles are provided to gain access to the drums for required routine visual inspections. See Figure 2.4. The packages have identifying numbers (bar codes) for tracking their location and contents. Waste remains within the CWC until it is shipped to other facilities for processing or disposal.

2.2.1.2 Retrievable Storage of Suspect TRU Waste in LLBG Trenches

Beginning in 1970, suspect TRU waste, primarily CH but also some RH waste, was placed in retrievable storage at the Hanford Site in specific trenches in Burial Grounds 218-W-3A, 218-W-4B,

M0212-0286.9A
HSW EIS 12-10-02

Figure 2.3. Aerial View of the Central Waste Complex

M0212-0286.9B
HSW EIS 12-10-02

Figure 2.4. Storage of Waste Drums in CWC

Proposed New/Modified Storage Facility: Additional CWC Buildings

Additional storage buildings would be constructed at CWC as part of the No Action Alternative. The new buildings would be similar to the larger existing buildings. Each new building would be about 37 m (120 ft) wide by 55 m (180 ft) long by 6.1 m (20 ft) high to the eaves, and would hold about 4,600 208-L (55-gal) drums. The interior floors would be sloped with raised perimeter curbing to contain and direct spilled liquids to collection sumps. The floors would be sealed with impervious epoxy resins to reduce the impacts of any liquid spills.

218-W-4C, and 218-E-12B. From 1972 to 1973, drums of TRU waste were placed in a concrete V-trench (218-W-4B) with a metal cover. After 1974, drums and boxes were stored in trenches on either asphalt pads or plywood and covered with wood sheathing, tarps, and plastic. A layer of at least 1.2 m (4 ft) of earth was placed over the tarp cover. After 1985, most TRU waste was sent to an aboveground storage facility. However, small amounts of TRU waste have occasionally been added to the trench inventory. A small volume of this waste was never covered with dirt and has recently been removed from the trenches and placed in the CWC. About 14,600 m^3 (516,000 ft^3) of suspect TRU waste remain in the trenches (FH 2003).

2.2.1.3 Retrievable Storage of TRU Waste in LLBG Caissons

The waste caissons, designed to store RH waste, are reinforced cylindrical steel and concrete vaults 2.4 m (8 ft) in diameter and 3 m (10 ft) high. Four caissons have received TRU waste. These four caissons were buried in Trench 14 of Burial Ground 218-W-4B. The caissons have an offset connecting chute between the caisson and the soil surface to reduce radiation dose to workers as the waste was

deposited. Gases from the caissons are passively filtered through high-efficiency particulate air (HEPA) filters. Caisson configuration is illustrated in Figure 2.5. Waste containers similar to 3.8-L and 18.9-L (1- and 5-gal) paint cans were dropped into the loading chute from a shielded shipment cask. Each caisson has been limited to a total plutonium-239 inventory equivalent of 5 kg (11 lb). Radiation levels in the caissons have been measured at 1500 to 10,000 R/hr (FH 2003).

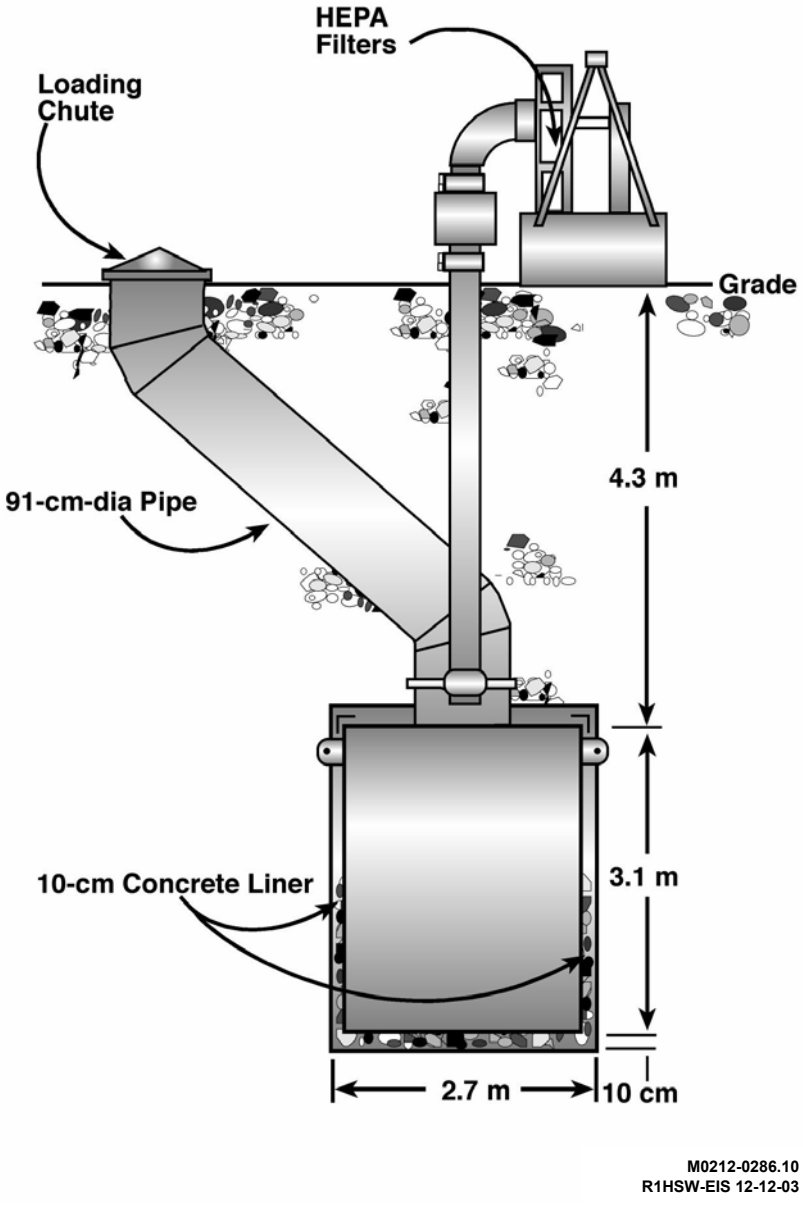

Figure 2.5. Schematic Drawing of RH TRU Caisson in the LLBGs

2.2.1.4 Interim Storage of ILAW in Grout Vaults

Grout vaults constructed in the 1980s would be used for interim storage of ILAW in the cullet form in the No Action Alternative. The existing vaults were designed to store low-activity tank waste in a grout-like form. Modifications to the vaults would be required before ILAW storage could take place. The modifications include excavation of surface materials, disassembly of vault covers, minor repairs to concrete surfaces and testing of leachate collection system, construction of superstructure over each vault to provide protection against wind and rain, and installation of additional leak detection monitoring. Once modifications are completed, ILAW canisters containing glass cullet form would be transported from WTP to the vaults via a tractor-trailer. A gantry crane would emplace the canisters. This process would continue until such time that new vaults could be constructed for disposal of the canisters. Then the canisters would be removed from the grout vaults and placed into the disposal vaults along with newly generated canisters.

2.2.2 Treatment and Processing Facilities

Treatment and Processing Facilities

Existing Facilities
- WRAP
- T Plant Complex
- ETF
- Commercial Treatment Facilities
- In-Trench Grouting
- Other DOE sites

Proposed New/Modified Facilities
- Modified T Plant Complex
- New Waste Processing Facility
- Mobile TRU Processing Facility
- Pulse Driers
- Commercial Treatment Facilities

Treatment and processing facilities include those used to treat MLLW to applicable regulatory standards, as well as those where TRU waste is processed and certified for shipment to WIPP. DOE is currently using a combination of Hanford and offsite facilities to treat some CH MLLW and CH TRU waste. Commercial facilities have provided treatment capabilities for limited quantities of CH MLLW under two existing contracts. DOE does not currently have facilities for treatment of most CH MLLW, treatment of RH MLLW or TRU waste, or for non-standard containers of MLLW and TRU waste. The ETF provides treatment for leachate from the MLLW trenches. Cat 3 wastes are treated either by in-trench grouting or placement in HICs as discussed in Section 2.2.3.

2.2.2.1 Waste Receiving and Processing Facility

The Waste Receiving and Processing Facility (WRAP) began operation in 1998 on the Hanford Site for management of TRU waste, MLLW, and LLW. The major function of WRAP is the inspection, repackaging, and certification of CH TRU waste to prepare it for transport and disposal at WIPP. The facility is also used to verify that incoming LLW meets HSSWAC, and to characterize MLLW for quality assurance purposes. A picture of WRAP is shown in Figure 2.6.

WRAP can accept CH drums and standard waste boxes. Handling of drums and boxes can be performed manually or by use of automated guided vehicles. WRAP provides the capability for non-destructive examination (NDE) and non-destructive assay (NDA) of incoming waste. The NDE is an X-ray process used to identify the physical contents of the waste containers in supporting waste characterization (see Figure 2.7). The NDA is a neutron or gamma energy assay system used to determine radionuclide content and distribution in waste packages.